A

(21119)

B.C.A.-III Sem.

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# 18012

## B.C.A. Examination, November-2019

## DATA STRUCTURE USING C AND C++

## (BCA-302)

*Time : Three Hours]* *[Maximum Marks : 75*

**Note :** Attempt questions from *all* sections as per instructions.



### Section–A

### (Very Short Answer Questions)

**Note :** Attempt all the *five* questions. Each question carries 3 marks. Very short answer is required not exceeding 75 words. 5×3=15

1. Write the limitations of arrays.

2. Define stacks and queues with an example.

3. What is the advantage of a header node in a linked list ?

4. How a binary tree is traversed in C language ?





5. What is the basic concept of insertion sorting ?

### Section–B

### (Short Answer Questions)

**Note:** Answer any *two* questions out of the following three questions. Each question carries 7½ marks. Short answer is required not exceeding 200 words.

2×7½=15

6. What do you mean by sparse matrix ? Explain how a sparse matrix is represented in memory.

7. What is D-queue ? Explain the insertion and deletion operations with the help of suitable example.

8. Write an algorithm to delete last node from a linked list.

### Section–C

### (Detailed Answer Questions)

**Note:** Attempt any *three* questions out of the following five questions. Each question carries 15 marks. Answer is required in detail. 3×15=45

9. Write algorithm and its C syntax to insert an element at the $K^{th}$ position into the linear array.

10. Write an algorithm to evaluate postfix expression and also implement the algorithm to the following expression :

    3, 1, +, 2, ↑, 7, 4, –, 2, * , +, 5, –

11. Write algorithm to perform insertion and deletion operations on binary trees and explain them with an example.

12. Describe hashing and various hashing techniques in detail.

13. Explain the following :

    (i) Priority Queues

    (ii) Heap Sort

    (iii) Applications of Binary Search Tree